REMARKS

Claims 8 to 12 and 15 to 19 were rejected under 35 U.S.C. §103(a) as unpatentable over Diz et al. (U.S. 6,544,361 B1).

Claims 8 and 15 have been amended to more particularly and distinctly claim the invention.

Reconsideration of the application based on the following remarks is respectfully requested.

35 U.S.C. 103(a) Rejections

Claims 8 to 12 and 15 to 19 were rejected under 35 U.S.C. §103(a) as unpatentable over Diz et al. (U.S. 6,544,361 B1).

Diz et al. discloses "a method for making flat, thin elements which consist of: producing a zirconium alloy blank also containing, besides the inevitable impurities, 0.8 to 1.3% of niobium, 100 to 1800 ppm of oxygen, and 10 to 35 ppm of sulfur; carrying out a β hardeing and hot rolling to obtain a blank and performing in it at least three cold rolling passes with intermediate annealing heat treatments." (See Abstract).

Claims 8 and 15 have been amended to specifically require that "a final of the hot-rolling passes [is] carried out between 820 – 20Nb% and 1100°C," and that the claimed process "produc[es] a flat product having a Kearns factor FT of between 0.30 and 0.70." Support can be found in the substitute specification on page 6, lines 24 to 25, for example.

Diz et al. fails to teach or show the claim limitation of "a final of the hot-rolling passes being carried out between 820 – 20Nb% and 1100°C" and "produc[ing] a flat product having a Kearns factor FT of between 0.30 and 0.70," as required in claims 8 and 15. The Office Action asserts that the Kearns factor and temperature ranges overlap, which is not the case. The Office Action alleges that Diz et al. discloses a Kearns factor range between .09 and .68. However, this is incorrect because Diz et al. refers to the Kearns factors FN and FR as having that range. Diz et al. fails to place a particular importance on the FT Kearns factor over the other Kearns factors for solving the problem of irradiation-induced growth in flat products containing Nb. The FN and FR Kearns factors are irrelevant to the claim limitations of claims 8 and 15 which are addressed only to the FT Kearns factor. The FT Kearns factor

disclosed in Diz et al. is .23. This is well below the .30 to .70 range claimed. The range claimed in claims 8 and 15 avoids excessive growth of the cross section under irradiation and excessive reduction in the cross section under irradiation. The lower limit of the range, i.e. .30, "ensure[s], during its use, th[e] grid will exhibit only small variations in the cross section of its cells in the absence of significant corrosion/oxidation and hydriding." (See the Substitute Specification page 10, line 11 to page 11, line 14). A lower Kearns factor in a given direction corresponds to free growth that gives rise to an expansion in the same direction. (See Substitute Specification page 4, lines 29 to 33). Furthermore the minimum temperature range in the present invention is based on the percent Nb content. The Office Action cites example 3 of Diz et al., which uses a temperature of 770°C to 790°C with 1% Nb, as corresponding to the claimed limitation. However, this is below the temperature range of the present invention which would be 800°C to 1100°C for 1% Nb. The transverse character of the flat product texture increases with the hot-rolling temperature, and therefore the lower temperatures in Diz et al. would not be desirable for the 1% Nb as in example 3 of Diz et al. (See Substitute Specification page 11, lines 26 to 27). In addition, Diz et al. does not teach or show any link between the precise Nb content of the alloy and the temperature of the last hot rolling step and the FT factor, which is a fundamental of the present invention which allows an adequate FT factor to be obtained.

Finally, the Examiner has not provided any objective evidence demonstrating why it would have been obvious to one of skill in the art to modify Diz et al to obtain the invention of claims 8 and 15. The temperatures and Kearns factor FT of Diz et al. are not similar enough to have the same expected properties. If anything the low Kearns factor of Diz et al. teaches away from a product having an FT factor above .30 as claimed in claims 8 and 15.

Withdrawal of the rejection of independent claims 8 and 15 under 35 U.S.C. §103(a) and dependent claims 9 to 12 and 16 to 19 is respectfully requested

CONCLUSION

It is respectfully submitted that the application is in condition for allowance and applicants respectfully request such action.

If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

Respectfully submitted,
DAVIDSON, DAVIDSON & KAPPEL, LLC

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By:_____
John S. Economou (Reg. No. 38,439)

Davidson, Davidson & Kappel, LLC
485 Seventh Avenue, 14th Floor
New York, New York 10018
(212) 736-1940